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Montana Golden Eagle Removal and Translocation Project

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by

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AN ABSTRACT OF A COLOR SLIDE PRESENTATION

THE PROBLEM

History of Depredations

During the lambing seasons of 1972 and 1973, two Dillon area ranchers reported to the Service that golden eagles were killing lambs on their ranches near Dillon, Montana. During June, 1974, they again reported eagle predation and a Service Law Enforcement Agent verified the depredations. Subsequently, they submitted two applications for permits to kill golden eagles which were killing lambs. The ranchers agreed to withdraw their requests for kill permits and to cooperate in a limited live removal and documentation study. Lambing was at least 50% complete when the study began, and only three eagles were captured and 44 eagle-killed lambs were verified (76% of all recorded deaths during the short study)

In February, 1975, U. S. Fish and Wildlife Service personnel representing Region Six, Area 1 of Region Six, and the Montana Cooperative Wildlife Research Unit met at the Denver Regional Office to review alternatives and formulate a management plan for 1975. The group agreed to proceed with plans for a live removal operation during March and April, prior to range lambing operations.

History of Sheep Industry

Historically, the Rock Creek-Sweetwater Basin Area was used primarily for raising sheep. The terrain and precipitation are such that sheep are more efficient than cattle in utilizing the available vegetation. In recent years, the sheep industry in Montana has shown a progressive decline in total numbers of sheep. Increased management costs, labor problems and predators, among other things, have been responsible for the decline.

AREA

One ranch (36 sections) is located at the head of Rock Creek, approximately 25 miles SE of Dillon, Montana. High rolling grassy hills characterize this ranch. Lava formations protrude from hillsides and surrounding mountains forming ideal perches and nesting sites for eagles. Deep coulees create thermals and updrafts that aid eagles in flight.

The other ranch (23 sections) is located 15 miles ESE of Dillon along the west border of the North Fork of Sweetwater Creek, referred to in this report as Sweetwater Basin. Sweetwater Basin has rougher terrain than the Rock Creek Area. Dominant vegetation is sagebrush with scattered patches of aspen and pine. Boulders and outcroppings of rock are common.

Both ranches provide excellent habitat for golden eagles; however, the Rock Creek Area provides the best hunting terrain for eagles.

TRAPPING PROGRAM

Eagle Populations

Results of aerial and ground censuses on the depredation area show that the golden eagle population declined steadily from a relatively high population in January to mid-May. Natural dispersion of wintering birds from the area and removal of approximately 70 by trapping during this period undoubtedly accounted for the indicated decline. In late May, during the peak of the lambing season, a sudden and sharp increase in numbers of eagles occurred. Subsequent to the arrival of this new population (mostly sub-adult birds), trapping success increased markedly, as evidenced by the capture of 65 eagles during June.

An explanation for the influx of eagles at the peak of the lambing season can probably be found in some combination of the following factors:

1. Jackrabbits, one of the most important prey species for golden eagles, are at a very low population level throughout the intermountain region. This may have caused the non-breeding segment of the golden eagle population to range widely in search of an adequate food supply.

2. The Sweetwater-Rock Creek Area contains few nesting golden eagles that would defend hunting territories against other eagles, and for this and other reasons it can be considered excellent habitat for non-breeding eagles.

3. Although precise data is not available, eagles in this area may have become more concentrated on the remaining rocks as the number of large sheep operations in the general vicinity decreased.

Techniques for Capture

Trapsites were set up in the following manner using the "Lockhart Method". A dead jackrabbit or lamb was laid on its side on the ground. Four weak spring and padded steel traps were then set and placed closely around the bait at the head, back, rear, and belly areas, respectively. The chains of two traps were wired together, forming two pairs of traps. The bait was removed, leaving the traps in position. Traps and chains were bedded into the ground using a pick hammer. Trap pan covers were placed on the pan of each trap and fine dirt or other dry material sifted over them until concealed. Traps were set "heavy" so smaller scavenger birds or mammals would not be caught. The bait animal was replaced in its previous position between the four traps and secured by driving two 8-inch spikes into the ground; one near the head and the other near the hips. Wire was used to attach the bait to the spikes. The bait animal should then appear "natural" upon the ground.

An 18-inch government trap stake, equipped with a chain repair link, was driven into the ground about 4 feet from the bait. A live eagle decoy, equipped with leather jesses (10-12 inches) joined by a swivel, was tethered to the stake. A 12-inch leather leash was attached to the swivel. On the other end of the leash was a swivel snap which was in turn attached to the chain repair link on the stake. The decoy eagle was not able to reach the bait or the traps.

Trapsites were checked at approximately 1-hour intervals, usually with a spotting scope from a hilltop where personnel would not disturb eagles visiting the bait. Trapped eagles normally were unable to fly with the combined weight of two traps holding them to the ground. To facilitate capturing a trapped eagle, a fifty foot drag rope was attached to the trap chains. The rope would unwind and provide a means of catching an eagle moving along the ground. The rope or chains were grasped in the hand and the trapped eagle simply "reeled in".

Good trapsite locations consisted of exposed, short grass fields that were in view of soaring eagles. Open fields free of fences and other obstructions were most often used. The trapsites were selected so that field personnel could use hilltops to observe eagle activities or captures and minimize disturbance at the trapsites.

Care of Captive Eagles

A log house at the sheep camp served as a holding facility. Furniture and debris were removed from the house, which was partitioned by a center wall and door; each half was approximately 12 x 15 x 7 feet. Nails and other sharp objects were removed from the walls and ceiling to prevent injury to flying eagles. Floors were covered with hay; doors and windows were covered with boards and burlap sacks to reduce light and prevent eagles from flying at light sources. Secondary latches composed of wire and chains were placed on doors for added security. Wooden tables and boxes were placed in the house to use as feeding facilities and prevent contamination of food from bedding materials. Upon completion, 15-20 eagles could be facilitated in each half of the house.

Throughout the project, other permanent holding facilities were used. The houses proved adequate for holding all eagles captured during any one period. On June 17, this involved up to 55 golden eagles.

Captive eagles needed no special care other than sanitary conditions and daily food. The eagles were fed a variety of food items, depending upon what was available. During March, jackrabbits and ewes composed the principal food. Time between checking traps was spent hunting food for eagles. Ewes found dead on the range were immediately butchered, quartered and laid on snow drifts. Meat was easy to preserve during cold weather. Food in excess of what the eagles could eat was placed on the tables and boxes in sheds.

During late March and early April, ground squirrels appeared and were included in the eagles' diet. In late April, ranchers contributed several dead calves for eagle food. During this time, yellow-bellied marmots were also collected. By early June, daily temperatures reached the point where meat quickly spoiled. Meat could no longer be stockpiled and the food situation became critical.

In mid-June, a cow was butchered. The meat was quartered, boned, and frozen. Food remains were removed periodically to prevent decoying and reduce odors. Bedding was removed and burned as necessary.

Methods of Transport

Captive golden eagles were confined for various periods of time, depending upon the number of adults, sub-adults and juveniles captured. Birds were released at the earliest possible convenience, but at least 12 to 15 eagles were transported at one time to reduce cost and mileage.

Two methods of transport were employed. The first involved loading eagles into large cardboard boxes or pre-made plywood crates with sliding doors. One eagle, free of restraints was placed in each box. The boxes were taped securely and placed in a two-horse capacity horsetrailer and covered with a canvas tarp. Adequate ventilation was permitted through the trailer and holes were cut in all boxes not containing openings.

The second method consisted of releasing the eagles, free of restraints, into a two or four-horse capacity horsetrailer covered by a tarp. The eagles were free to move about in the trailer. A fresh butchered sheep carcass was placed in the trailer as a food source. This method was used when daily temperatures were high enough to endanger birds in boxes and when the large number of eagles being transported prohibited the use of boxes for lack of space. When daytime temperatures exceed 75° F. the eagles must be transported at night.

Loading of eagles always proceeded rapidly and was usually conducted in the early morning hours, permitting release on the same day or early the following morning. At the release site, each eagle was separately removed from its box or trailer and tossed into the air permitting a good take-off. Any weakened birds not capable of flying were recovered and cared for until the bird was strong enough for flight.

Release Sites

Eagles were released in known golden eagle habitats where the probability of depredation on domestic lambs would be minimal. Three areas, located on public lands, were chosen as release sites.

1. Flathead Valley - approximately 50 miles north of Kalispell, Flathead County, Montana, along the Coal Creek drainage in Cyclone Park.

2. Swan Valley - at a point approximately 1 mile north of the Lake-Missoula County line, Montana, along Highway 209.

3. Pawnee National Grassland - at a point 4 miles east of Purcell, Weld County, Colorado, and 2 miles north of Highway 14 near Coal Creek drainage.

RESULTS

Birds Captured

Trapping operations began on March 4, and continued through July 8, 1975. During 96 trapping days, 145 golden eagles and 2 bald eagles were captured (See Tables 1 and 2).

Banding

All eagles captured during the removal program were banded with individually numbered USFWS aluminum leg bands. Rivet bands were preferred over crimp-type bands, since the eagles, using their beaks, could easily remove the crimp bands.

Color Marking

Yellow paint (ram cote, chick yellow) was applied to the wings of 50 captive golden eagles before release. Adult eagles received one dorsal yellow stripe on each wing extending from the shoulder, across the mid-wing to the secondaries. The sub-adult and juvenile eagles received two dorsal yellow stripes 1 inch apart on each wing, similar to the adults. In addition, one central tail feather was painted yellow. The remaining 95 captive eagles were not color marked since some doubt arose concerning how visible the paint would be upon release.

Weights

The weights of nearly all captured eagles were obtained to determine their physical condition.

Table 1.

Sex and age composition of golden eagles captured from March 4 through July 9, 1975 on the sheep ranges near Dillon, Montana.

	Male	Female	Total
Adult	29	33	62
Sub-Adult	21	22	43
Juvenile	22	18	40
Total	72	73	145

Table 2.

Population structure of golden eagles captured on the sheep ranges near Dillon, Montana.

	March	April	May	June	July	Total
Adult						
M	12	6	1	9	1	29
F	9	7	3	13	1	33
Sub-Adult						
M	7	4	3	7	0	21
F	7	5	0	10	0	22
Juvenile						
M	3	1	2	14	2	22
F	2	1	1	12	2	18
Total	40	24	10	65	6	145

Foot Measurements and Plumage

The length of the foot (tip of center toe to tip of hallux) was used to aid in distinquishing between male and female eagles. Foot lengths of 140 mm. or less indicated males and lengths greater than 140 mm. indicated females. The size and appearance of each eagle was also considered in sexing it.

The color and molt pattern of the tail feathers were used to age eagles. Dark tail feathers indicated adult birds. White bases on all tail feathers indicated juveniles. Molting tail feathers or combinations of white and dark bases indicated sub-adults.

Blood Samples

Blood was obtained from wing veins of 27 captive eagles for detection of pesticide residues.

Possible Impact on Depredations

Removal of 145 golden eagles from the vicinity of the lambing ranges prior to and during lambing undoubtedly reduced the amount of depredations on lambs by eagles. However, it was impossible to measure the magnitude of reduction. Severe lamb losses occurred, but factors responsible for all of the losses were not determined.

Operators of ranches, who practiced shed lambing, in close proximity to trapped ranches reported good production in 1975. The concensus of those ranchers was that severe weather conditions were responsible for most of their lamb losses through the direct affects of poor food availability, stress, and disease. Those ranchers believed much higher losses would have occurred if special care facilities and medication had not been used. The number of lambs lost to weather-related causes on the shed lambing ranches indicate that higher losses probably occurred during range lambing on the trapped ranches.

OPERATIONAL PROBLEMS

Weather and Access

Severe weather was the most serious factor that hindered the project. Persistent snow storms, blizzards, and deep snow complicated by frequently moderating temperatures continually interrupted field operations. At least 25 of 128 possible trapping days were lost to severe weather. Countless morning periods were unproductive due to heavy fog that limited visibility.

Access problems developed as a result of snow and thawing conditions. Often, trapping operations were carried out in 15 inches of snow covering 8 to 12 inches of soft mud. Vehicle breakdowns were a constant reality.

Care and Handling of Eagles

Excessive time and effort was expended by field personnel locating food for captive birds. Successful trapping efforts caused buildups of captive eagles (up to 55) which required large amounts of food. The problems were overcome by long days of hunting and excellent cooperation from the ranches, who contributed fresh livestock carcasses.

Translocation of captive eagles caused difficulties. Placing the eagles in individual boxes involved considerable space. On two occasions, so many eagles required transport that it was necessary to use a four-horse capacity trailer with the eagles released inside.

CONCLUSIONS

The golden eagle removal and translocation project on the Dillon area ranches reduced predation on those ranches by removing 145 golden eagles from range lambing areas prior to and during lambing. Eagles preyed upon lambs on the lambing ranges, as indicated by a number of lamb carcasses examined, and severe lamb losses were experienced in spite of eagle control efforts. A number of factors contributed to the losses, including severe weather conditions, food availability, stress, disease, and predators. It is impossible to assign a relative number of lamb losses to any factor.

Removal and translocation is an expensive and inefficient method of alleviating eagle depredations.